The DENTAL DIGEST

October

1932

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The DENTAL DIGEST

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A METHOD FOR THE CONSTRUCTION OF LARGE INLAYS IN PULPLESS TEETH

A. B. ADELSON, D.D.S.
Chicago

WHETHER pulpless teeth should be retained or extracted is a debatable question. I wish to point out, however, that more pulpless teeth are restored now than a few years ago, and it is my belief that when patients return for dental care, after the long absence owing to the depression, there will be an even greater number of pulpless teeth to consider.

The method described here for dealing with the restoration of pulpless teeth overcomes certain difficulties encountered in the construction of large inlays. The advantages of this method are: (1) better retention is obtained by the use of loops of gold in the pulp chamber; (2) reduction in weight due to the hollow center in the inlay, and (3) reduction of contraction by reducing the mass of metal.

For convenience, the restoration of an upper pulpless molar is described. The mesial surface of the tooth is broken down to the gingival, involving about half of the buccal surface, the occlusal half of the lingual surface, and part of the distal surface.

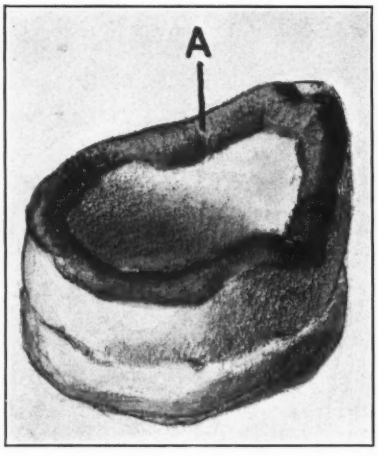

Fig. 1—Model constructed of investment material. A, cavo-surface margins covered with wax to the width of 1 mm.

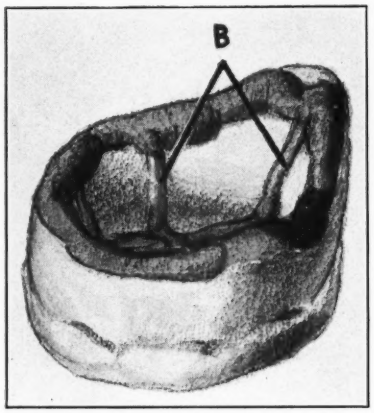

Fig. 2—B, wax sprues (18-20 gauge) adapted to outline of pulp chamber.

TECHNIQUE

1. The pulp chamber is filled with wax; a V-shaped wire is inserted with the open ends in the wax and the closed end half exposed forming a loop.

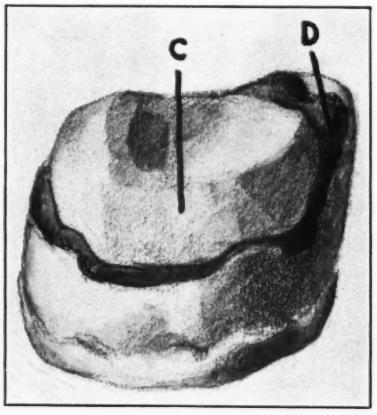

Fig. 3—C, investment material poured in pulp chamber over the wax sprues and into cavity. D, wax covering cavo-surface margins.

The impression of the cavity is taken over it with inlay wax held in a copper tube.

2. The model is run up with a hard investment material, and all wax is removed from the model.

3. All margins are covered with wax to about a millimeter toward the pulp chamber (Fig. 1*a*).

4. A wax sprue (from 18 to 20 gauge) is bent to a U-shape; the closed end is placed in the pulp chamber and the open ends attached to the buccal and lingual wax margins (Fig. 2*b*).

In the case of a molar, a second U-shaped wax sprue is placed with the closed end in the pulp chamber and the open ends attached to the gingival and proximal wax margins.

5. The pulp chamber and cavity are filled with investment a little short of the outline of the inlay (Fig. 3*c*), leaving wax margins about a half millimeter exposed (Fig. 3*d*).

6. All the investment is covered with wax, and then, the carving is done (Fig. 4).

In order to get the correct contact point for the inlay, Doctor J. L. Morlan, of Chicago, suggests that it is desirable to have the adjacent teeth included in the impression, and he gives the following steps to obtain this:

7. After the tube impression has been taken and examined, if it is correct, it is placed back on the tooth.

8. A small impression tray is filled

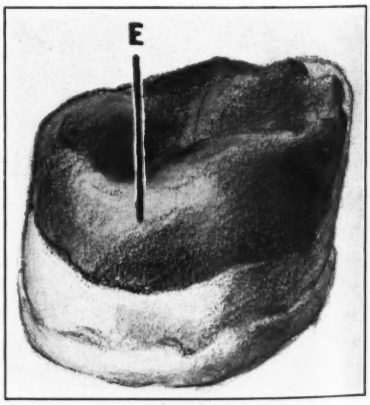

Fig. 4—Wax pattern (E) carved to occlusion and ready for investing.

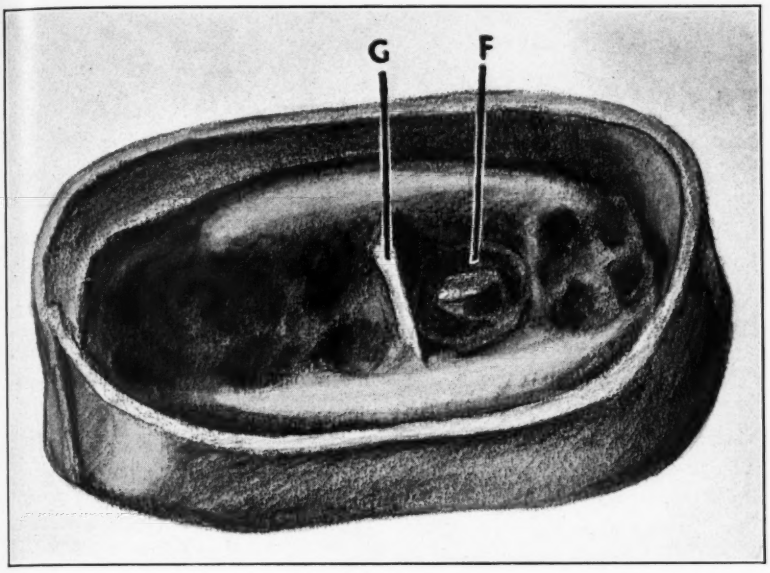

Fig. 5—F, tube impression in position in bite wax. G, copper matrix between wax pattern and proximating tooth.

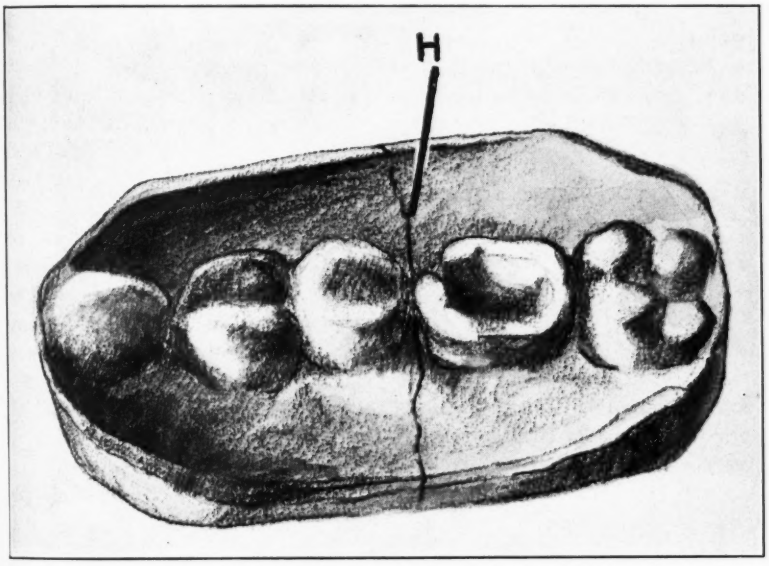

Fig. 6—Cast showing fracture line H to permit easy carving of proximal surface of wax pattern.

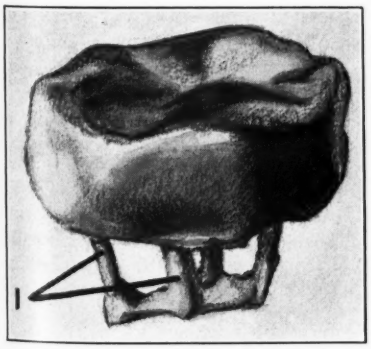

Fig. 7—Lateral view of finished casting showing the retention lugs (I) which fit into pulp chamber.

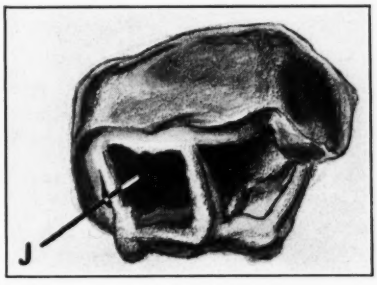

Fig. 8—Finished casting showing the hollow interior (J).

with bite wax and pressed firmly over the tube and adjacent teeth; then, it is chilled and removed. The tube impression will, as a rule, come out with the wax impression (Fig. 5*f*).

9. A piece of copper matrix (40 gauge) is placed on the wax impression between the tube impression and the adjacent tooth in a bucco-lingual direction (Fig. 5*g*).

10. The model is run up in a hard investment, the tube being filled first, then separated. The model will easily break between the tooth with the cavity and the adjacent tooth (Fig. 6*h*) and permit easy carving of the proximal surface of the pattern.

Conclusion

The principle involved in the technique described here is that in forming the wax pattern certain inner portions of it are replaced with investment material. From this principle it follows that the technique can be successfully applied in vital teeth in which the destruction of the tooth structure is extensive and retention becomes a problem. An added advantage will be had in the protection of the pulp by a thick layer of cement between it and the metal.

It is advisable for those who try this technique to construct a few models on extracted teeth before a practical case is undertaken, because, although the technique is simple, it is exacting.

Fig. 9—Finished casting in position.

CONTRAINDICATIONS FOR NITROUS OXIDE-OXYGEN ANESTHESIA

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Pittsburgh

THE contraindications to the use of nitrous oxide-oxygen anesthesia are (1) pronounced arteriosclerosis; (2) valvular heart disease; (3) aneurysm of the aorta; (4) high blood pressure, and (5) respiratory obstruction. To this group of conditions should be added coronary disease, or lesions of the arteries supplying the heart. In a general way it may be said that the great contraindication to the use of this anesthetic agent is cardiovascular disease.

The thing of interest is not so much the nomenclature of the diseases that contraindicate the use of nitrous oxide-oxygen anesthesia as the question of how to distinguish the patient who is a poor anesthetic risk when he presents himself for examination. Fortunately this is not especially difficult nor is it time-consuming. The past medical history and a few simple observations are usually sufficient to establish the status of the patient with regard to the advisability of giving him an anesthetic.

Clinical Tests

Arteriosclerosis—Arteriosclerosis is easily diagnosed by palpation of one of the peripheral arteries. The radial artery lends itself readily to such examination. If the artery is sclerotic it can be rolled under the examining finger, is difficult to compress, small irregularities, or beading, may be felt along the course of the vessel, and frequently the artery will be tortuous. An additional sign of aid is the white circle—arcus senilis—which is commonly seen about the periphery of the iris in pronounced cases of this condition.

Valvular Heart Disease—In advanced cases of valvular heart disease (the incipient case need not be of much concern here) the history is usually sufficient to determine whether or not the case is a favorable one for nitrous oxide-oxygen anesthesia. In advanced valvular disease the patient will give a history of shortness of breath on exertion, swelling of the ankles, and cyanosis of the mucous membranes and finger nails. A patient in whom these symptoms are marked is obviously a poor risk.

Disease of the Coronary Arteries—A history of excruciating pain over the heart, usually described as a sense of constriction, perhaps radiating down the left arm, is usually indicative of disease of the coronary arteries, either angina pectoris or coronary thrombosis, both of which contraindicate the use of nitrous oxide-oxygen anesthesia.

Aneurysm of the Aorta—The diagnosis of aneurysm of the aorta is fairly difficult to establish, but fortunately the condition is not common, and, too, there are usually associated heart symptoms which will serve to rule out the case.

Respiratory Obstruction—Respiratory obstruction may be due to many different conditions, and the obstruction may occur at any point between the mouth and lungs, but one symptom common to all severe forms of such obstruction is shortness of breath. Cyanosis is also commonly observed. A peculiar crowing noise is often heard on inspiration when the obstruction is high up in the respiratory tract.

The recognition of all the contraindications mentioned here to nitrous oxide-oxygen anesthesia may be summed up with this statement: Given a patient with hardening of the radial arteries, shortness of breath, blueness of the mucous membranes and finger nails, and swelling of the ankles, nitrous oxide-oxygen should be employed with caution, if at all.

Blood Pressure—Unfortunately, a negative history in the case of high blood pressure is not so convincing as in the foregoing conditions. It is well known that many persons have a high pressure without being aware of the hypertension, and with absolutely no symptoms to suggest it. The great danger in administering the gas to such a patient is that of cerebral hemorrhage. There is another group of cases in which there is coincident hypertension and heart disease which is either occasioned by hypertension or by coronary disease. In such cases death due to the cardiac condition is not uncommon.

The popular belief of 100 plus the age for the normal blood pressure is incorrect, but is sufficiently accurate to determine whether the anesthesia should be administered. The blood pressure during the contracting phase of the heart (systole) should not be more than 150 mm. of mercury; the pressure during the relaxation phase of the heart (diastole) should not exceed 100 mm., regardless of the age of the patient. Young patients should, of course, have pressures much below these levels.

It is a safe procedure to make a blood pressure observation for every patient who is to be given a nitrous-oxide oxygen anesthetic.

EMPYEMA OF THE MAXILLARY SINUS

REPORT OF CASE

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Indianapolis

THE maxillary sinus or antrum of Highmore often becomes of interest to the dentist. Its close proximity to the dental apparatus invites secondary infection. The case reported here is unusual, but similar conditions of the antrum are not infrequently brought about through some deviation from the normal by the teeth and their pathologic changes.

Etiology

Maxillary empyema is suppurative inflammation of the sinus. From a

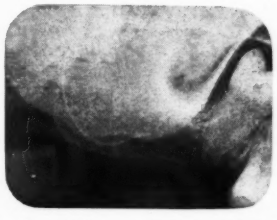

Fig. 1—Inverted upper left second bicuspid protruding into the maxillary sinus.

dental standpoint, its causes may usually be attributed to one of the following etiologic factors: (1) periapical abscesses from underlying teeth, (2) trauma exerted in removing teeth, (3) periodontal disturbances extending to the antrum through the medium of the continuity of tissue, (4) impacted or malposed teeth, (5) proliferation of infection induced by tooth removal, (6) retained root fragments, or (7) metastases from dental infection by way of the blood and lymph streams.

Symptoms

Acute disturbances of the sinus present the same general clinical picture as any other acute exacerbation; namely, pain and fever. This is followed by suppuration and a feeling of fullness and pressure over the affected area. Pressure and fullness, in turn, may be traced to the hyperemia and enlargement of the mucosa. Breathing on the affected side is difficult, impaired, or impossible, and a feeling of dizziness is noticed when bending forward.

The condition is said to be chronic when it has existed from eight to twelve weeks. Pus will usually flow from the nostril, and polypi will be formed on the mucous membrane lining the antrum. Post nasal drainage into the throat may be noticed.

Treatment and Prognosis

Treatment consists of two major procedures: (1) removal of the cause, and (2) establishment and maintenance of free drainage. The mortality is low, but the condition may recur. The local prognosis is dependent on resistance, climatic conditions, and response to treatment.

Report of Case

History—A girl, aged 18, was admitted to the Robert W. Long Hospital, December 3, 1930, because of frequent attacks of sore throat.

December 3, under local anesthesia, the tonsils were removed. Postoperative convalescence was uneventful.

The patient was discharged from the hospital December 3, apparently in good condition. She was instructed to return to the hospital after the holidays.

I first saw the patient December 18, 1930, in the outpatient dental clinic.

According to the patient's account at this time, in March, 1930, the left side of the face began to swell. The family dentist was consulted, and what was supposed to be an acutely abscessed, upper left molar, which had been previously filled, was removed, but no relief was obtained. At a subsequent visit, roentgen examination revealed an inverted upper left second bicuspid, the crown of which protruded in its entirety into the maxillary sinus (Fig. 1). The apical end extended to a point just below the superior alveolar ridge, and the tooth was (and was found to be at the time of operation) in good alinement, anteriorly and posteriorly, with the remaining teeth.

Difficulty in breathing on the left side had been noticed for eight years. The patient had had a complete set of deciduous teeth which were always in excellent condition; that is, there was normal shedding; there were no cavities nor had the patient had toothaches.

Family History—The patient's father and mother, six brothers, and one sister are all living and well. One brother, aged 21, had advanced pyorrhea. A sister, at the age of 8 years, had had the gums lanced to bring about eruption of the permanent centrals. She had suffered severe pain before lancing but obtained immediate relief after treatment.

Removal of Inverted Upper Left Second Bicuspid—January 15, 1931, under local anesthesia, a curved incision was made from a point just distal to the cervical line of the upper first bicuspid and carried upward to the bucco-muco fold. The flap was retracted with blunt subperiosteal dissection. The overlying bone of the tooth root was removed, and a sufficient exposure of the antrum was accomplished by chisels and mallet. The tooth was removed. A considerable amount of thick, yellow pus exuded. Incision was approximated and sutured with black silk, and a small rubber tube inserted between the sutures into the antrum to facilitate drainage.

Daily irrigations of warm physiologic solution of sodium chloride were resorted to, and the postoperative course and healing were uneventful. After instructions were given to have full mouth roentgenograms taken and to return within the next month for further dental surgery the patient was discharged on January 25. Roentgenograms at this time disclosed the upper right first molar abscessed, and the upper right second molar unerupted and slightly impacted (Fig. 2). The third molar was congenitally missing.

Removal of Upper Right First and Second Molars—February 20, the patient was again admitted to the hospital. February 25, under local anesthesia, the upper right first and second molars were removed, and the granuloma of the first molar came out attached in one piece. The floor of the antrum was plainly visible but not disturbed. Twenty-four hours later the temperature was 101° F., but returned to normal in forty-eight hours.

The patient was discharged February 28, with instructions to return in two weeks for postoperative examination. Examinations in the outpatient clinic at this time showed that the sites of both operations were healing nicely. The patient was referred to the rhinology outpatient department because of impaired breathing on the right side.

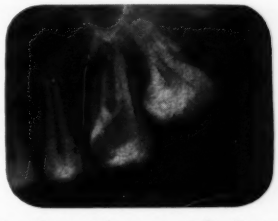

Fig. 2—Abscessed upper right first molar and unerupted upper right second molar, slightly impacted.

Radical Antrum Operation—From this time on, the condition of the right side gradually became worse, pain increased, and the patient was again hospitalized, August 17, at which time roentgenograms showed definite infection of the right antrum.

A radical antrum operation was done. The diseased polypoid mucous membrane was removed, and the right inferior turbinate was infracted toward the septum. A large window was made in the lateral nasal wall into the maxillary sinus. Routine postoperative treatments terminated in good recovery.

The Editor's Page

RECENTLY a defunct broker while in conversation with a dentist remarked on the unusually high morale of professional men during these uneasy days. The broker observed that few professional men were in the suicide ranks and few had suffered the depression of spirits that had overtaken the men of finance and business. The dentist replied, "Professional men do not expect great wealth. They are satisfied with a decent standard of living and an assurance of a comfortable retirement. The dentists who are successful harbor no ideas of a villa on the Riviera or of imported motor cars. To be sure, in common with everyone, their incomes have suffered in this period. Where the broker gets meaning from life in watching a ticker tape, and a banker in the exchange of money for profit, the dentist gets a satisfaction in doing an interesting and important job. Whoever lives even in the shadow of the scientific tradition—with old problems still unsolved and new ones constantly challenging—need never be bored and never depressed. The professional man has too much important work to do to allow himself time for self-pity."

With a fresh memory of this conversation we went to the American Dental Association meeting in Buffalo eagerly but with some wonder. Was this dentist-friend of the broker stating the case correctly? Was the morale of professional men higher; were they seriously concerned with their "interesting and important work"?

The method of observation upon which these forthcoming conclusions are based is not spectacular. We observed and reflected upon the spontaneous, unstudied reactions of a fair-sized number of dentists in attendance at the meeting. They were from all parts of the country; they were young and old; they were eminent men and ordinary men. We met and talked with them in hotel lobbies, in the meeting hall, on the streets. They were a fair cross-section of contemporary American dental life.

About five thousand persons, mostly dentists, took a holiday from their work and spent on an average of a hundred dollars each to attend the meeting. The fact that they took a week's time away from their offices and spent their money is significant. We may record it as a vote of confidence in the future.

The first striking reaction that one had from the casual observations of these men *en masse* was the fine morale that they displayed. We heard no talk of depression; no wailing and lamenting; no grumblings of discontent. It is a safe guess to say that not a single person at this meeting had not suffered in some degree from the depression; still there was a spirit of cheer and confidence apparent. These men are not professional optimists; they are a group of solid citizens with courage and hope.

Unquestionably dentistry is in transition. A readjustment of the mechanisms of medical care is inevitable. Private practice is on the testing block. The reaction of those attending the Buffalo meeting to the question of health insurance was interesting. The case of health insurance was presented in cold, scientific detachment. The advantages and disadvantages were described. The reaction of the interested listeners points eloquently to the fact that the profession is aware of the problems ahead and is prepared to approach them intelligently and without sullen prejudice.

The most important observation made at the Buffalo meeting, however, is the fact that the profession continues to make a rapid scientific advancement and that an increasing number of men are seriously preparing themselves for their "interesting and important work."

Dentists are often heard to complain of the monotony of their work and the unsatisfactory returns therefrom. If we look about us in the contemporary economic order and compare our vocation with others we should be impressed with the fact that we are comparatively secure and fortunate. First, dentistry is concerned with human health and well being. Second, dentistry is not a transitory vocation; it is not a decadent industry; its future is bright. Third, the dentist is independent. No mergers will throw him out of work; there is no danger of technologic unemployment. Fourth, dentistry is both a profession and a business with the privileges, advantages, and responsibilities of each. Finally, the practice of dentistry is an honorable vocation, and from it, in the expression of Stuart Chase, we may enjoy the Luxury of Integrity.

SKIN AND ORAL LESIONS

J. E. SCHAEFER, M.D., D.D.S.
Chicago

Fig. 1—Hemangiomas

Etiology—The simple and cavernous forms are congenital. The etiology is unknown. In the form of telangiectasis the condition is acquired and occurs as an accompaniment of various skin diseases.

Pathology—Growths are present consisting mainly of blood vessels. In the simple and cavernous forms there is new formation of vessels; in the telangiectatic form, dilatation of preexisting vessels. Red or purplish spots, more or less elevated, are present, which may be solitary or multiple. These spots occur on the lips, cheeks, palate, floor of the mouth, and tongue, especially the tip of the tongue. The cheek at the angle of the mouth is the favorite site. These spots are spongy structures which can be partly emptied by compression but rapidly refill. The size of the spots increases from crying, coughing, or under excitement. Hemangiomas are benign tumors which are dangerous only because they offer vulnerable sites for hemorrhage and for bacterial invasion.

Treatment—Treatment may be by (1) refrigeration with carbon dioxide snow or liquid air; (2) cauterization; (3) roentgen therapy or radium; (4) electrolysis; (5) ligation, or (6) excision.

Fig. 2—Erythema Multiforme

Etiology—The etiologic factor has not been determined. It may be toxemia or microbic infection. The disease seems to have a relationship to arthritis. Chiefly persons in early life are affected and the attacks occur most commonly in spring and fall.

Pathology—The pathologic manifestations are crimson red or purplish red, edematous, symmetrical macules, papules, vesicles, and bullae, variously grouped or isolated. The condition is marked by exudation, erosion, and ulceration. There is a tendency to recurrence. It is rare that the mouth is involved without the skin. The most common sites on the skin are the dorsum of the hands and feet, the legs and forearms, the face and neck. The mucous membrane of the nose may be involved as well as that of the mouth. The lesions appear in various shapes, sizes, and shades of color. Various designations of the disease, appropriate to the different types, have been given, such as erythema annulare, or circinatum, erythema figuratum, and erythema marginatum. Several types may occur simultaneously.

Treatment—For the painful erosions in the mouth, Ormsby recommends 15 drops of iodized phenol, and the use of soothing and alkaline mouth washes. The condition may be expected to clear up spontaneously in a few weeks. Vaccine treatment has been used with success against recurrence. Restriction of diet, attention to elimination, and the exclusion of food and drug idiosyncrasies are important. A search should be made for the presence of focal infection.

Fig. 3—Herpes Zoster

Etiology—An infection of the nervous system is thought by many to be the cause of herpes zoster. In herpes zoster of the mouth, the second and third branches of the trigeminal nerve are involved. Dental disorders, such as infected roots, devitalized pulps, supernumerary teeth, and the extraction of teeth seem to stand in causal relationship to this disease which is more prevalent in spring and fall than at other times.

Pathology—A group of vesicles on an erythema base (shingles), situated along the distribution of cutaneous nerves from the posterior ganglia, characterizes herpes zoster. The most frequent site where these vesicles appear is the chest. Lesions may appear on the forehead or face and may involve the eye; lesions on the cornea may lead to corneal ulcer. The most frequently involved mucous membrane is that of the mouth and pharynx. Under the vesicles the mucous membrane is edematous. The vesicles burst more rapidly than those on the skin and leave bloody erosions that are painful. Violent neuralgic pain and toothache are also characteristic of herpes zoster in the mouth. Sequelae in the form of trophic disturbances, such as atrophy of the alveolar process and loss of teeth, occasionally follow.

Treatment—Carbolic acid ointment, heat, morphine, and roentgen therapy comprise the treatment for herpes zoster. Relief has been obtained in some cases by the removal of diseased conditions of the teeth.

Fig. 4—Scurvy

Etiology—Scurvy is the result of a deficiency of vitamin C. This vitamin is present in the largest amount in the juices of the citrus fruits, particularly the orange, and also in the juice of fresh or canned tomatoes.

Pathology—The gums become swollen and deep purple. They bleed at the slightest irritation and sometimes spontaneously. The most striking bone lesion present is the subperiosteal hemorrhage.

Treatment—Orange juice and a balanced diet provide the treatment.

Fig. 5—Herpetic Stomatitis (Aphthous)

Etiology—Little is known regarding the causes of herpetic stomatitis. It is not common in the first year of life but after that it is frequently seen throughout childhood. It is often associated with some disturbance of the gastro-intestinal tract because of a dietary indiscretion, and is accompanied by slight fever.

Pathology—The lesion begins as small, yellowish, discreet papulovesi-

cles which become tender ulcers in a few hours. Large patches are not infrequently formed by the coalescence of individual lesions.

Treatment—A bland diet should be maintained. Raw fruit and food containing acid should be avoided. Milk of magnesia should be given at intervals. The lesions should be touched with a mild solution of silver nitrate or powdered alum.

Fig 6—Tuberculosis Orificialis

Etiology—Tuberculosis orificialis is an extension or inoculation of internal tuberculosis, or an extension from the skin.

Pathology—The lesions occur about the orifices of the body. The mouth is rarely involved. Dewey states that of 8,000 patients examined in a laryngologic clinic only four patients showed tuberculosis of the mouth. In the case illustrated here the diagnosis of the mouth lesion was made only after pulmonary tuberculosis had been revealed by roentgenograms of the chest. The tongue is most frequently involved, then the gingivae and lips. The infiltration begins with the development of nodules which soften and ulcerate. The ulcers have irregular borders, a yellowish-green floor and contain seropurulent fluid in a small amount. The tongue may present deep fissures instead of ulcers. Diagnosis may be confirmed by biopsy.

Treatment—General antituberculosis measures and a bland mouth wash comprise the treatment.

Fig. 7—Epulis

Etiology—In some cases, inflammation due to irritation from carious teeth, root stumps, ill-fitting plates, overlapping fillings, and occasionally calculus is the cause of epulis. In other cases the etiology is unknown. The disease is more common in women than in men. It is more frequent during pregnancy when the epulis becomes more conspicuous through rapid growth. These facts suggest metabolic and circulatory changes as possible etiologic factors. The condition occurs most frequently during the third and fourth decades.

Pathology—An epulis is a benign giant cell tumor arising from the periodontium or from the periosteum of the alveolar process or jawbone. Usually it develops in the interproximal space, generally labial or buccal. Either jaw may be affected. The foreign body type of giant cell is often present in such large numbers as to form the bulk of the tumor tissue. The growth of the tumor is expansive and there may be little bone absorption. The tumor is cyanotic and rather soft and spongy. The size may vary from that of a pea to that of a hen's egg. The smaller tumors may be smooth; the larger ones are nodular or lobulated, and frequently contain spicules of bone.

There is also a fibromatous type of epulis, which is small, hard, and tough. The cut surface is pale. The epulis is sometimes pedunculated but more often is broadly attached.

Gingival granulomas are small tumors of granulation tissue arising from the gingivae or from the tissue of the dental pulp. They are occasionally included with the epulides from the clinical standpoint.

Treatment—Treatment consists of surgery followed by electrical coagulation.

Fig. 8—Papilloma

Etiology—Like that of most tumors the etiology of the papilloma is uncertain.

Pathology—The term papilloma is applied, on the basis of the form, to tumors composed of branching cauliflower-like or finely lobulated growths of epithelium with a stroma that branches to carry blood vessels into each prolongation. In the mouth they are seen most commonly on the gums, tongue, lips, uvula, and pillars of the fauces where normally the papillae are more developed. Oral papillomas, being exposed to constant traumatism, are frequently inflamed or ulcerated.

Treatment—Because these tumors are epithelial in origin and because in the mouth they are subject to irritation, they may be considered precancerous according to the theory that ascribes the origin of cancer to continued irritation of an epithelial structure. The treatment, therefore, consists in surgical removal of the growth or electrical desiccation.

Fig. 9—Basal Cell Carcinoma of the Cheek

Etiology—Leukoplakia and irritation from the sharp edges of a tooth are predisposing factors to basal cell carcinoma of the cheek.

Pathology—Papillary proliferations appear as a rule in the posterior portion of the cheek, in the region of the second and third molars. The bone and the anterior pillars of the fauces are involved early. The jaws become locked. There is a fetid odor. Basal cell carcinoma is in general of slow growth and is more easily cured than the squamous cell variety. When the cancer is in the mouth, cachexia is early and severe because of interference with the intake of food and because of absorption of toxin and disintegrating products of the tumor tissue.

Treatment — Radium, roentgen therapy, and surgery may be employed in the treatment of carcinoma of the cheek.

Fig. 10—Squamous Cell Carcinoma of the Lip

Etiology — Trauma, including chronic chemical and mechanical irritation, pipe smoking, and habitual exposure to weather may cause squamous cell carcinoma. The condition occurs most frequently in men and on the lower lip.

Pathology—The lesion may start as a small nodule, a circumscribed keratosis, a fissure or warty area, or a small abrasion, resulting in early ulceration. A scab forms over the small ulcer but it does not heal nor does it spread until some time has elapsed. Its harmless appearance causes it to be neglected. After some time, infiltration becomes more marked; the edges of the ulcer become indurated and are raised above the level of the lip; the floor is hard and has a yellowish-red surface. The lip becomes hard and firm and loses its mobility. The lymph glands become involved; the tumor extends to the floor of the mouth, the tongue, and the soft parts of the neck. Metastases in the inner organs are rare.

Treatment—Treatment may be by radium or surgery.

(Text continued on page 355)

Fig. 1—Hemangiomas

Fig. 2—Erythema Multiforme

Fig. 3—Herpes Zoster

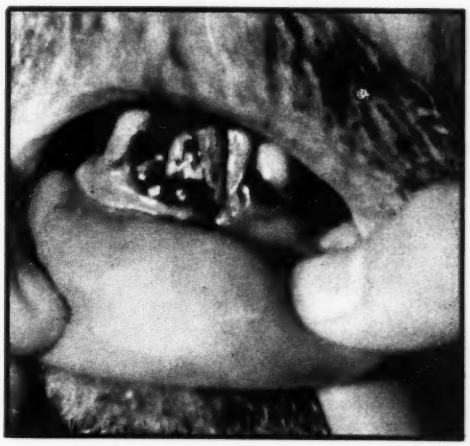

Fig. 4—Scurvy

Fig. 5—Herpetic Stomatitis (Aphthous)

Fig. 6—Tuberculosis Orificialis

Fig. 7—Epulis

Fig. 8—Papilloma

Fig. 9—Basal Cell Carcinoma of the Cheek

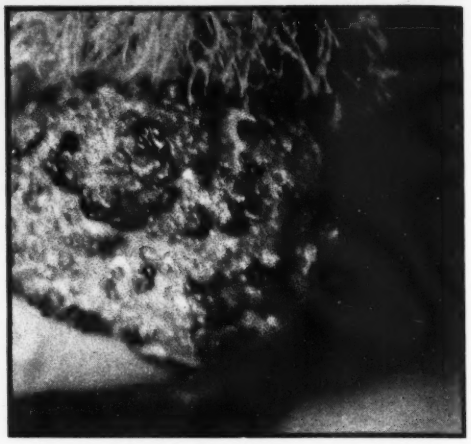

Fig. 10—Squamous Cell Carcinoma of the Lip

Fig. 11—Carcinoma of the Tongue

Fig. 12—Leukoplakia Buccalis (Smoker's Patch)

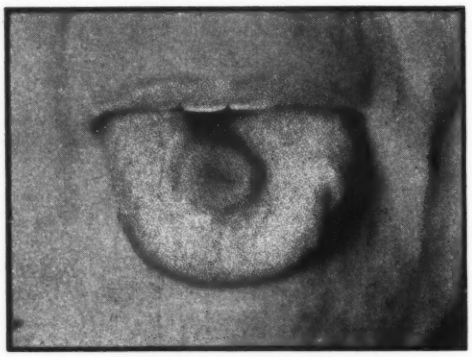

Fig. 13—Chancre of the Tongue

Fig. 14—Syphilitic Lesion of Lip at Muco-Cutaneous Juncture

Fig. 15—Gumma of the Tongue

Fig. 11—Carcinoma of the Tongue

Etiology—Predisposing causes of carcinoma of the tongue are chronic diseases of the mucous membrane and their sequelae, chronic glossitis, fissures, ulcers, and scars, particularly scars from syphilitic lesions and leukoplakia. Tobacco and syphilis may be considered indirect etiologic factors since they predispose to leukoplakia. Chronic irritations or erosions of the tongue, such as may be produced by roots or sharp edges of teeth or by badly fitting plates, can act as exciting causes. Ewing holds bad teeth in addition to tobacco and ill-fitting prostheses to be the dangerous combination. Cancer of the tongue occurs chiefly in men; this is true even in countries in which women habitually smoke.

Pathology—The favorite site for the lesion to appear is on the lateral margin; the tip of the tongue is next in order of susceptibility. The lesion begins as a small, hard nodule which soon ulcerates. The ulcer has raised, indurated edges. Severe, radiating pain occurs early and the lymph glands are involved early. The floor of the mouth becomes involved and adhesions make eating and swallowing difficult. A fetid odor and cachexia are present. Hemorrhages occur. Diffuse cancerous infiltration of the tongue is unusual. Carcinoma of the tongue is generally of the acanthomatous (prickle cell) type.

Treatment — Radium or surgery may be used in treatment.

Fig. 12—Leukoplakia Buccalis (Smoker's Patch)

Etiology—Chewing or smoking tobacco and, to a lesser degree, strong alcoholic drinks, too hot or irritating foods, carious or jagged teeth, and ill-fitting plates are the known causes of leukoplakia buccalis. Syphilis predisposes to but does not directly cause the lesion; intensive mercurial treatment is a possible etiologic factor. The typical lesion has occurred in men who have never contracted syphilis nor used tobacco.

Pathology—At first, the spots, which occur mainly on the mucous membrane of the cheeks, the dorsum and lateral portion of the tongue, and on the lips near the vermilion, are of a dark red, but the color changes to milky, grayish-blue, or bluish-white. The spots enlarge and coalesce to form patches, irregular in outline, sharply demarcated, and sometimes slightly elevated. They next thicken and assume a wrinkled, leathery appearance, with induration around the base. The epithelium exfoliates. There may be fissures and ulceration, which cause discomfort on chewing and talking. Salivation or dryness is present. The course of the disease is slow. Butlin states that the processes going on are proliferation of the cells of the rete malpighii with cellular infiltration in the papillary layer of the corium, a gradual shrinking and disappearance of the papillae and the formation of some scarlike tissue immediately beneath the epidermis. The horny layer is hypertrophied, the cells retaining their nuclei.

Treatment—Treatment consists in abstaining from all local irritants (tobacco and highly spiced, hot, acetous, and iced foods and drinks), and in the care of the teeth. If the lesion is of a proliferating nature with roughened surface, the area should be destroyed by radium or electrical desiccation. Leukoplakia buccalis is one of the precancerous lesions.

Fig. 13—Chancre of the Tongue

Etiology—Infection takes place by kissing, perverse practices, and the use of contaminated utensils. The tongue is the most frequent site, after the lip, for the primary syphilitic lesion in the mouth.

Pathology—The lesion is a hard, somewhat elevated area of infiltration with an eroded surface, or an induration in the substance of the tongue. There may be suppuration and an ulcer with infiltrated borders. The scar is associated with deep retractions. Adenopathy is also present.

Treatment — Antisyphilitic treatment should be instituted. The patient should avoid local irritation. Hygienic and medical local treatment should be prescribed as indicated by the suppuration and ulceration if these occur.

Fig 14—Syphilitic Lesion of Lip at Muco-Cutaneous Juncture

Etiology—The lesion is a manifestation of the secondary stage of syphilis.

Pathology—The lesion shown in Fig. 14 occurred at the muco-cutaneous juncture of the lip in a girl, 16 years of age. It was the only syphilitic lesion present at the time. The mucous outlets of the body are among the chosen sites for syphilitic lesions. The lesions of the secondary stage of syphilis occurring on the skin and mucous membranes appear as macules, papules, and pustules, with several varieties under each of these heads. It is not unusual for more than one type to exist at the same time.

Treatment — Antisyphilitic treatment should be instituted. A silver nitrate pencil may be used if the lesion is moist.

Fig. 15—Gumma of the Tongue

Etiology—A gumma appearing on the tongue is a tertiary syphilitic manifestation.

Pathology—The lesion appears as a deep-seated, painless nodule, with a tendency to ulceration and destruction of the neighboring tissues. Its occurrence is frequent in the mouth. On the tongue, diffuse, interstitial infiltration may result in an enormous enlargement of the organ. Resultant scars deform the tongue. Cancer sometimes develops in the scar of a gumma of the tongue.

Treatment — Antisyphilitic treatment is indicated. The patient should avoid tobacco, iced and hot foods and drinks, condiments, acetous foods, and alcoholic fluids.

ROENTGENOGRAPHIC CHANGES FOLLOWING ROOT AMPUTATIONS

REPORT OF ONE HUNDRED CASES

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A VALUABLE adjunct to the conservative treatment of teeth with root canal therapy is the minor surgical operation commonly known as root amputation, root resection, and apicoectomy. Many more teeth that are so readily subjected to the forceps may be retained as useful members by this method. The question of pulpless teeth is still an important one; however, until devitalization of teeth has been definitely proved to be a menace, the rank and file of the dental profession will continue this conservative treatment, and justly so, particularly because of the present scientific treatment of canals.

With the proper selection of cases, the results of root amputations are gratifying. In selecting cases for this type of operation, it is important to consider the history of the patient. When patients have any systemic involvement in which the focus of infection may be in the teeth, it is not advisable to institute slow, conservative treatment. It is generally believed best to remove these devitalized teeth.

The age is an essential factor in the prognosis. Marked destruction of bone, indicating a poor risk at an advanced age, might not contraindicate treatment when the patient is young. It is safe to follow the rule of performing a root amputation on those teeth in which there is still sufficient supporting bone left after the apex of the root has been removed. In the majority of cases, the prognosis may be considered favorable only if one third of the root end is involved; however, when the root is exceptionally long, as much as one-half the length of the root may be removed and sufficient supporting bone may still be left.

This operation is particularly applicable to anterior teeth, both upper and lower arches; the bicuspids might be included, depending on the proximity to the antrum on the upper jaw, and the mental foramen on the lower jaw.

Indications for Root Amputations:

1. The presence of chronic infectious areas about the teeth. The amount of destruction above the apices is not a contraindication provided there will be adequate supporting bone remaining.

2. Teeth requiring root therapy in which the apical portion of the roots are curved and cannot be filled completely.

3. When there is an obstruction in the apical third of the canal, such as pulp stones or concretions, constriction of the canal, or excementosis of the root end, which prevent complete root therapy.

4. When instruments, such as files, or broaches, might be broken in the apical third of the root, or perforations of the apical third of the tooth may occur during root therapy.

5. Fracture of the apical third of a tooth due to trauma, with resulting devitalization of the tooth. The fractured apex can be removed following root therapy on the remainder of the tooth.

Preliminary Steps

Good results cannot be expected following root amputation unless the preliminary steps are carefully performed.

1. The root canal therapy must be done under aseptic conditions.

2. The canal filling should be fully condensed and filled.

Occasionally there is a case in which it is almost impossible to dry the canal because of seepage from a chronically infected area above the apex. It is best in such cases to perform the root amputation prior to the final filling of the canal.

3. Before the incision is sutured, the wound is packed with gauze, the rubber dam is applied to the tooth or teeth in question, and the canal is thoroughly dried, sterilized, and filled.

4. The excess filling material coming through the apical portion can then be removed, and sealed at the apex with a hot burnisher.

5. The lips of the wound are then coaptated and sutured to place.

6. It is exceedingly important to check the occlusion in all cases. Whenever the teeth are in traumatic occlusion they must be relieved.

DATA IN ONE HUNDRED CASES

Females	48
Males	52

Ages	Cases
From 1 to 10 years	2
From 10 to 20 years	62
From 20 to 30 years	21
From 30 to 40 years	13
From 40 to 50 years	1
From 50 to 60 years	1
	Total 100

Youngest patient	9 years
Oldest patient	53 years

BONE REGENERATION

Shortest time	5 months
Longest case on record	7 years
Number of teeth involved	From 1 to 5 teeth
	Total: 157 teeth
Completed record of cases showing complete bone regeneration	68 cases
Record showing partial regeneration (Incomplete because follow-up was not possible)	32 cases
Doubtful cases or failures	3 cases

1. No regeneration after a period of one year.
   Patient complained of slight pain.
   Occlusion was not relieved originally.
   Occlusion relieved finally.
   Further roentgenographic check-up to be made.
2. Patient originally reluctant to undergo the root amputation.
   Finally submitted to root amputation.
   Returned after three months with tooth missing.
   Patient's statement: Two weeks after operation she felt some pain and went to a dentist and insisted on having the tooth removed.
3. See Fig. 18 and legend.

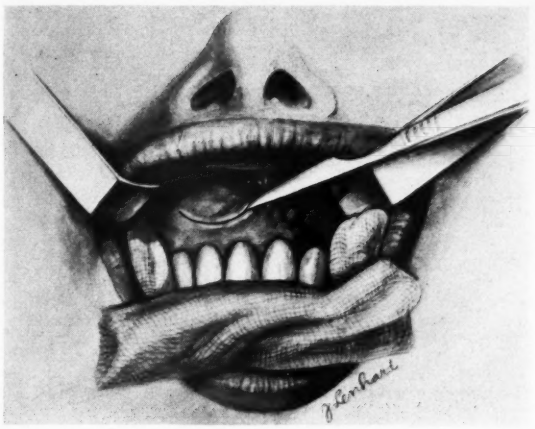


Fig. 1—Semilunar incision wide enough to give proper vision of the field when mucoperiosteal flap is raised. The convexity should be toward the gingival margin and the lowest point of this convexity must be far enough from the gum margin so that its blood supply is not cut off. The distance should be approximately 0.5 cm.

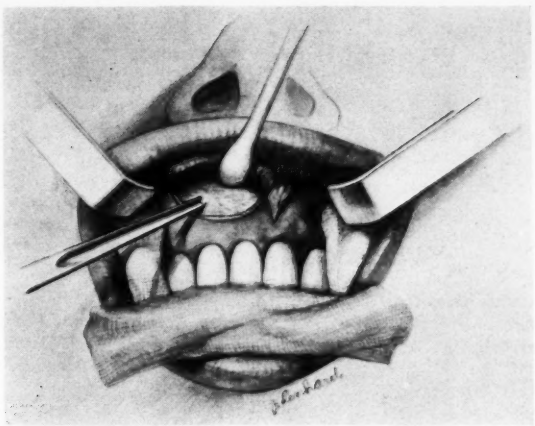


Fig. 2—Mucoperiosteal flap elevated and held in position with periosteal elevator. The chisel is in position to remove outer plate of bone at the apical region so that the window thus made will expose the apex of the tooth with its granuloma or cystic membrane.

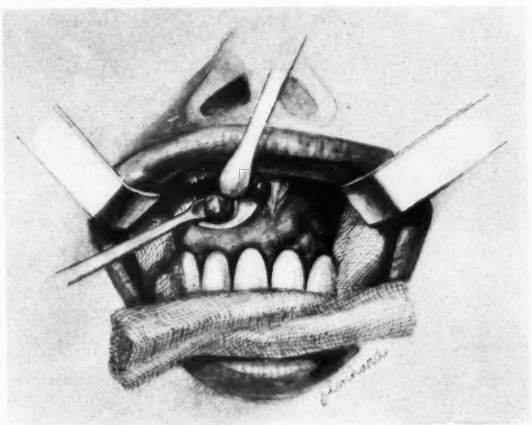


Fig. 3—Outer plate removed sufficiently to expose the infected area and apex. Care must be taken not to remove too much bone so that the adjacent teeth will not be injured. At this stage the curet is used to remove the granuloma or soft material as well as possible.

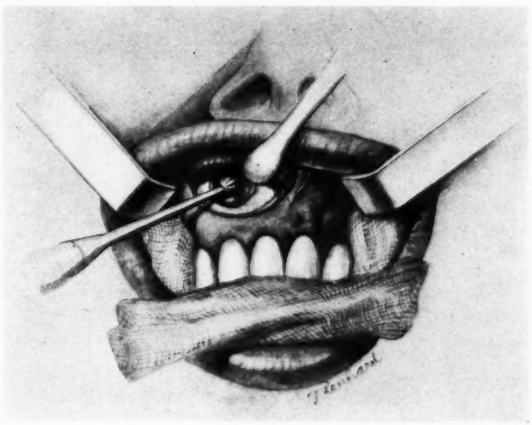


Fig. 4—The root apex is cut down to conform with the bone of the cavity, preferably with a round bur because the use of a fissure bur might injure the adjoining healthy bone and possibly the adjacent roots. The round bur can then be revolved around the bone cavity acting as a curet to detach any adhering membranous material. The round bur will also burnish the root canal filling at the apical opening.

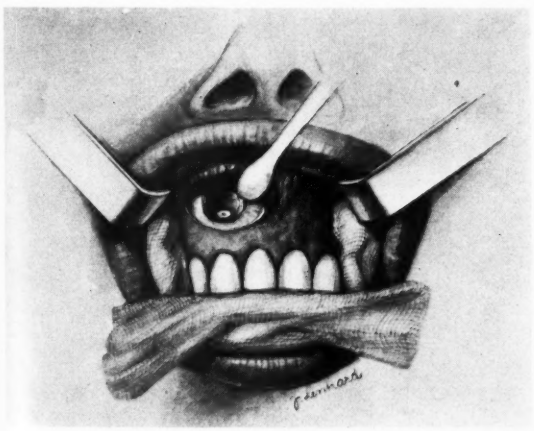


Fig. 5—Root end cut down to conform with base of cavity; all débris thoroughly removed, and all sharp edges of bone made smooth. Note that the incision is so planned that when the lips of the wound are brought together there will be sufficient underlying bone present for the support of the flap.

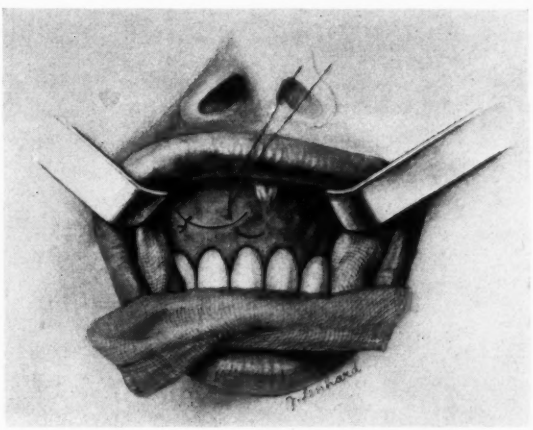


Fig. 6—Lips of wound coaptated and sutures inserted to hold them in position. Sutures used are either dermal suture or horsehair.

A

B

C

Fig. 7—A, Granuloma, upper right lateral, in a woman, aged 36; B, root amputation done March 21, 1928; C, check-up roentgenogram taken November 10, 1930, showing bone regeneration.

A

B

Fig. 9—A, Acute alveolar abscess, upper right central, in a youth, aged 19. Roentgenogram taken March 16, 1931; B, measuring wire in position before filling root (March 29); C, root amputation (April 7). Complete destruction of buccal plate was noted at operation; D, bone regeneration (January 26, 1932).

C

Fig. 8—A, Cystic area, upper left lateral, in a woman, aged 30, February 24, 1928; B, roentgenogram immediately following root amputation, March 1, 1928; C, roentgenogram showing bone regeneration taken December 15, 1931.

A

B

C

D

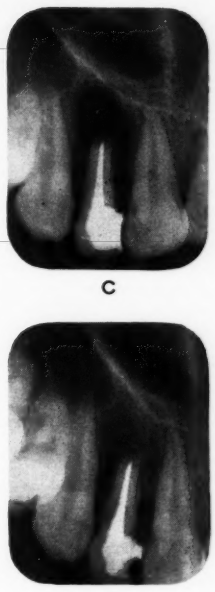
Fig. 10—A, Measuring wire in position before filling root; B, incomplete root therapy with granuloma at apex of upper left lateral; C, root amputation (March 3, 1931); recheck showing partial regeneration (June 11, 1931); D, bone regeneration (February 15, 1932).

A

B

C

Fig. 11—A, Granuloma, upper right lateral (March 8, 1928); B, roentgenogram following root resection. The apex could not be rounded off thoroughly because the patient, a youth, aged 18, would not cooperate during operation (March 10); C, Roentgenogram taken December 15, 1931, showing bone regeneration.



C

D

Fig. 12—A, Granuloma, upper left lateral, in a boy, aged 14; B, following root therapy (April 14, 1931); C, following root amputation (April 14); D, bone regeneration (December 31).

A

B

C

D

Fig. 13—A, Granuloma, upper left cuspid, in a woman, aged 45; B, following root resection (February 25, 1931); C, partial bone regeneration; D, roentgenogram taken December 25, 1931, showing complete bone regeneration.

A

B

Fig. 14—A, Granuloma, upper right central, in a woman, aged 32 (November 21, 1929); B, regeneration of bone (December 6, 1931), following root amputation.

A

B

C

D

Fig. 15—A, Granuloma, upper right central, in a girl, aged 14; B, root therapy completed; C, following root amputation (July 31, 1931); D, bone regeneration (December 22, 1931).

A

B

Fig. 16—A, Granuloma, upper left central, in a man, aged 28 (May 28, 1928); B, regeneration of bone following root amputation (December 28, 1929).

A

B

C

D

E

Fig. 17—A, Granuloma, upper right central, in a boy, aged 14; B, broach in canal; C, root therapy completed; D, root amputation performed December 2, 1929; E, bone regeneration after eleven months.

A

B

C

D

E

Fig. 18—A, Granuloma, upper left lateral, in a woman, aged 35; B, root amputation was done April 1, 1928; root pivot was not removed for fear of fracturing; apical portion was filled with amalgam; unfortunately,

some particles of amalgam were retained. C, Check-up roentgenogram (December 9, 1929) shows some regeneration of bone but not sufficient for the time elapsed. At this time, the upper left cuspid was tested for vitality and found to be nonvital. The retained infection might have been due to the devitalized cuspid. D and E, Root therapy on cuspid. The patient was advised to return for further check-up but died under anesthetic for a major operation six months later.

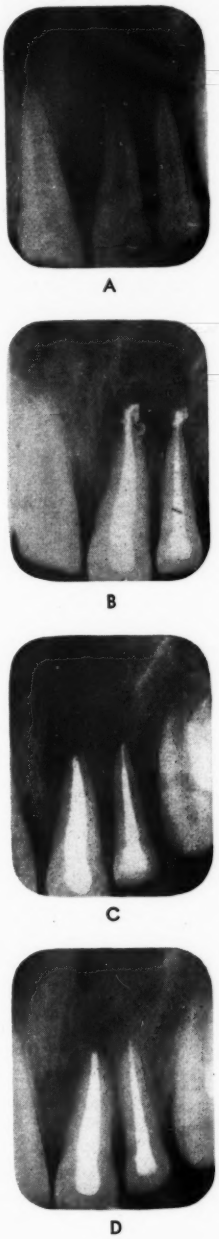


Fig. 19—A, cystic area over right central and lateral due to trauma, in a boy, aged 13; B, root therapy; C, following root amputation (November 19, 1930). At operation the buccal plate was found to be completely gone on both teeth; curettage and rounding off apexes; D, bone regeneration (February 15, 1932).

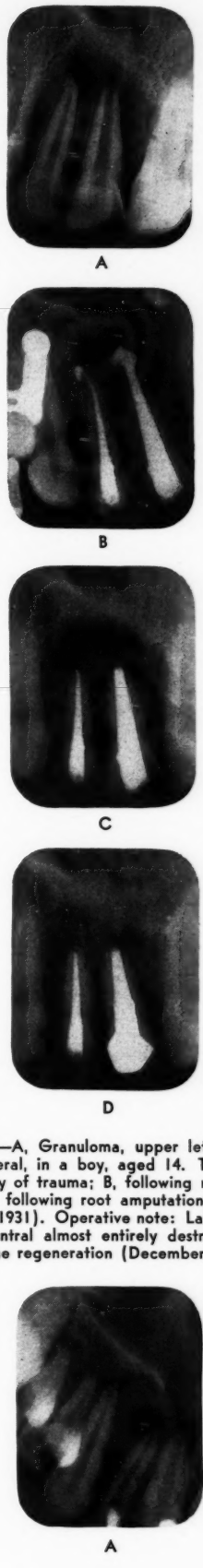


Fig. 20—A, Granuloma, upper left central and lateral, in a boy, aged 14. There was a history of trauma; B, following root therapy; C, following root amputations (February 25, 1931). Operative note: Labial plate over central almost entirely destroyed. D, bone regeneration (December 28).

Fig. 21—A, Cyst, upper left central and lateral, in a boy, aged 16; B, following root therapy (May 2, 1931); C, following root amputation (May 13); D, bone regeneration (November 14).

C

D

Fig. 22—A, Cyst, lower right and left centrals, in a boy, aged 12; B, following root amputations (November 21, 1930); C, check-up roentgenogram (February 24, 1931) showing beginning of bone regeneration; D, complete bone regeneration (June 16).

A

B

C

D

Fig. 23—A, Infectious area around lower right central and lateral; B, April 1, 1931, following root therapy in a man, aged 25; C, June 9, beginning of bone regeneration two months following root amputations; D, December 3, bone regeneration eight months later.

A

B

C

D

Fig. 24—A, Necrotic area, lower incisors, in a boy, aged 17; teeth nonvital; B, root therapy completed; C, root amputations. Operative note: Buccal plate completely destroyed on both centrals (April 2, 1931); D, regeneration of bone (December 22).

A

B

C

D

Fig. 25—A, Necrotic area, lower incisors, in a girl, aged 14, who gave a history of trauma. Laterals responded to vitality test. B, Root therapy of centrals only. Operative note: Curettage of lower right and left centrals. Buccal plates necrosed to gingiva; right and left lateral apexes exposed; buccal plate destroyed on right lateral. Root therapy instituted following operation, June 4, 1931; no further surgery. C, Three months later; beginning of bone regeneration; D, complete bone regeneration (December 22).

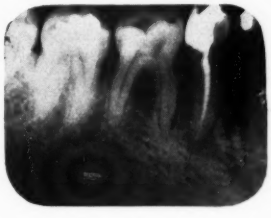
A

B

C

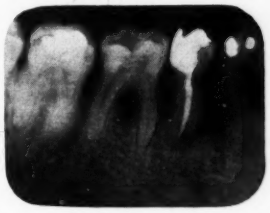
D

Fig. 26—A, Cyst, lower five teeth, from the left lateral and including right cuspid, in a youth, aged 18; B, measuring wires in canals; C, following root amputations; D, regeneration of bone one year following root amputation.



A

B



C

Fig. 27—A, Granuloma, lower left second bicuspid, in a woman, aged 26; B, root amputation (May 14, 1929); C, roentgenographic check-up (April 16, 1930) showing regeneration.

CONTRAINDICATIONS FOR APICOECTOMY

A

B

C

Fig. 28—A, Marked destruction, lower centrals, in a boy, aged 12. Root amputation was contraindicated. Surgical curettage was attempted because of the age of the patient. B and C, Roentgenographic check-up seven months later showing regeneration of bone.

Fig. 29—Radiolucent area is either an enlarged anterior palatine foramen or nasopalatine cyst. Note unbroken lamina dura of upper left central. Anterior teeth vital.

Fig. 30—Radiolucent area is anterior palatine foramen which might be mistaken for a granuloma. Note unbroken lamina dura. Upper right central vital.

Fig. 31—Cyst involving lateral and central. Marked destruction of bone. Root amputation was contraindicated.

Fig. 32—Root amputation attempted; apexes cut but not removed; technique poor.

THE ESTHETICS OF FACIAL RESTORATION

HAROLD O. BROWN, D.D.S.
Rochester, New York

(*Conclusion*)

Denture Form

BY denture form I mean the actual shape the finished denture is to assume. At this point one must decide whether or not it is going to be necessary to build out cuspid eminences, to flatten or build out under the lip or cheeks, and how to design it so that it will harmonize with the particular type of face with which one is working. Much of this must depend on whether the mouth is fresh or has had considerable resorption. If the dentures are not designed correctly distorted muscles will never regain their correct positions. Those muscles must be allowed to drape easily into place. They must not be pushed into any position other than the one they will most easily and naturally assume. One must not try to upholster the face. If there are well resorbed ridges to deal with, more material can be used than in the case of a fresh extraction. I feel that the most difficult denture to design is the one that follows immediately after a full-mouth extraction. If there has been little resorption of alveolar tissue there is barely room for sufficient material to hold the teeth, and great care must be exercised not to distort the muscles of expression.

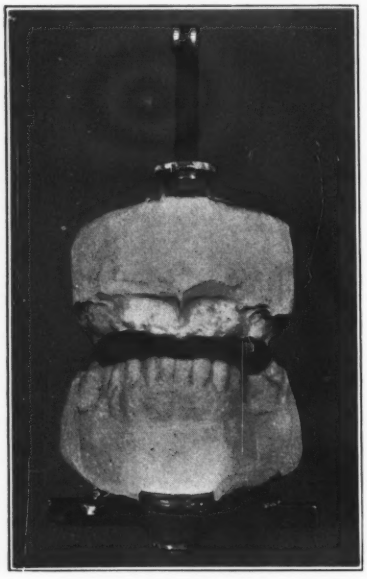


Fig 30

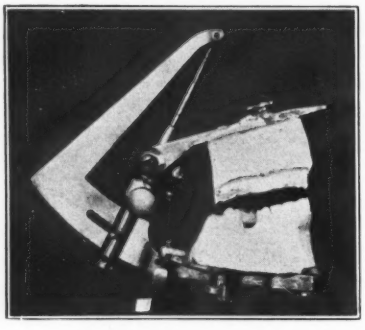


Fig. 31

Figs. 30 and 31—Labial and buccal flanges were cut away to expose entire ridge in same case as Fig. 29.

In handling a case of this sort, I cut away all labial and buccal flanges (Figs. 30 and 31) so that the entire ridge is exposed. I then proceed to grind in the teeth, butting them directly against the model (Figs. 32 and 33). This is done in order to see exactly where the necks of the teeth are being placed. The neck should be placed so that the remainder of the tooth will have the appearance of growing out of the gums as the natural teeth formerly did. The set-up should not be wider at the necks, from distal cuspid to distal cuspid, than it is at the incisal edge (Figs. 34 and 35).

When the set-up is wider at the necks it is often the result of selecting too narrow a tooth, and gives the effect often seen in natural teeth when the cuspids have been extracted early in life. This effect is sometimes spoken of as a "rabbit mouth." Such cases require extreme accuracy in the selection of the tooth to be used, but this selection can usually be made by comparing the artificial teeth with the natural extracted teeth. Inasmuch as considerable grinding is done so that those teeth cannot be used in any other case, a check of the selection should be made in the mouth. No laboratory worker can make a set-up of this sort. The dentist must do it himself. After the teeth have been tried in, a thin veneer of wax is laid,

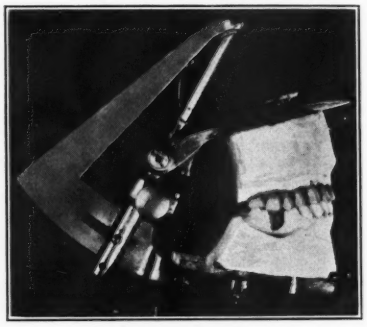


Fig. 32

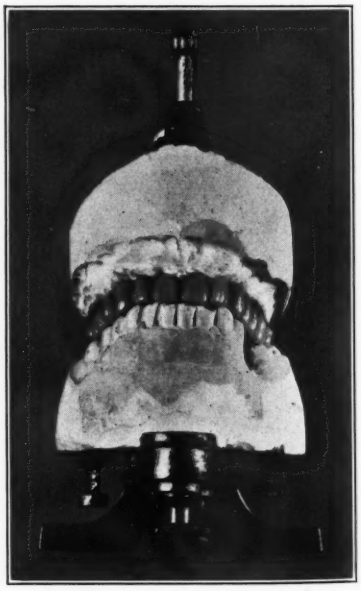


Fig. 33

Figs. 32 and 33—Teeth ground in and butted against model to see where necks should be placed in same case as Fig. 29.

Fig. 34

Fig. 35

Figs. 34 and 35—Set-up should not be wider at necks, from distal cuspid to distal cuspid, than it is at incisal edge.

over the model in the labial and buccal areas, and the denture is ready for the vulcanizer. Owing to the fact that there is little material with which to work, any carving or festooning (except of rugae) is left until the case is finished, and then done with a large bur.

Fig. 36 shows a finished denture of the type just described. The periphery is rolled outward to allow the lip to drop down to place. Plenty of room has been made for muscular attachments, and the whole denture was designed for a person with thin lips and a recent extraction. No more denture material was used than necessary.

If plenty of resorption has taken place one does not have to be so careful in the length of tooth and bulk of material (Fig. 37), but the same care

Fig. 36—Finished denture designed for a person with thin lips and recent extraction.

Fig. 37—Denture design when plenty of resorption has taken place.

in making the plate design must be exercised to see that the lips are allowed to drape into place without distortion. Although the necks need not be ground, one should be sure that they are back under the ridge so that the exposed part of the tooth gives the appearance of growing out of the gums.

In designing the denture one must bear in mind that the muscles are to be given an unrestricted opportunity to follow the course of least resistance to carry them into their proper positions.

Fig. 38 shows two dentures for well resorbed mouths. The one on

Fig. 38—Two dentures for well resorbed mouths.

the left has been built out above the cuspid and laterals so that the lip is compelled to drop straight down into its correct position. If the incisal edge of the cuspid is properly posited to hold the corner of the mouth where it belongs this denture design will serve its purpose. The denture on the right of Fig. 38 has not been built out properly. The lip will tend to

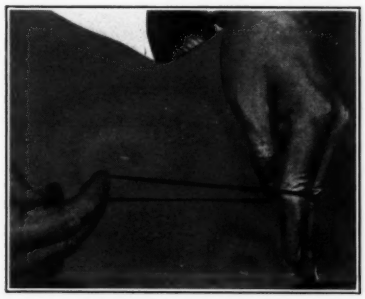


Fig. 39—Obicularis oris muscle acts like a rubber band drawn tight over the back of the hand. Here, rubber band will stay in position or drop off the hand.

draw back and leave considerable tooth structure showing, as well as deepen the wrinkles at the alae of the nose. It will also shorten the upper lip.

The obicularis oris muscle acts like a rubber band drawn tight over the back of the hand. In Fig. 39 the rubber band will stay in position or drop off the hand. In Fig. 40 the band will tend to draw up just as the lip draws up over protruding teeth. Fig. 41

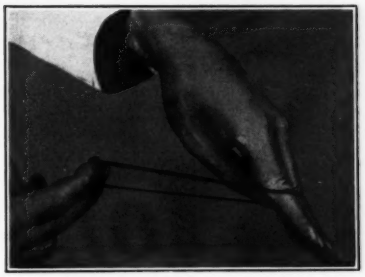


Fig. 40—Rubber band will tend to draw up just as the lip draws up over protruding teeth.

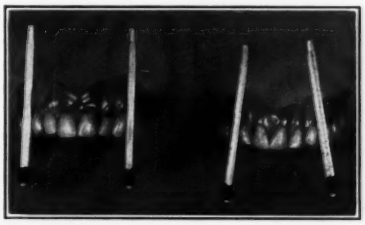


Fig. 41—Front view of same two dentures shown in Fig. 38. Left, proper design to hold obicularis oris in its correct position; right, slanted; lip tends to draw in toward nose, causing wrinkles.

shows the front view of the same two dentures referred to in Fig. 38. The one on the left is properly designed to hold the obicularis oris in its correct position, and the one on the right is slanted so that the lip tends to draw in toward the nose causing the little, fine, perpendicular wrinkles shown in Fig. 3.

If any one tooth in the set-up can be considered more important than any other it is the cuspid. By rotating this tooth one can often shut off the view of the posterior teeth; therefore, one should not hesitate to use a large, strong cuspid. It is much bet-

Fig. 42—Two centrals do not match in color or type; one is a square and the other a taper. The other anteriors are also off color.

Fig. 43—Lapping was resorted to and incisal edges were chipped with a rough stone.

ter to show six large teeth than eight or ten smaller ones. By the correct placement of this tooth the necessary variations between square and tapering types can often be obtained; or, in other words, by turning the cuspid more nearly into line a taper set-up with a square tooth can be made, or, by flaring the distal border a bit a square type with a tapering tendency can be made.

Anterior Alinement

It is impossible to make any hard and fast rule governing the set-up of the six anterior teeth. In a general way, I would say that rather dark teeth should be given preference because the lighter they are, the more

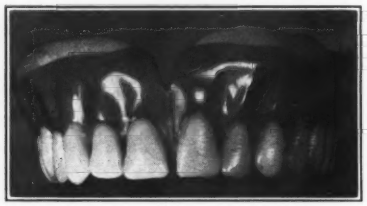


Fig. 44—Teeth turned somewhat out of line and space left between centrals.

they will stand out. A study of the dentures in the accompanying illustrations will show that in scarcely any case are all of the six anteriors of the same color. Ordinarily, the two centrals should match, although in Fig. 42 the two centrals do not match nor are the two of the same type. One is square, and the other, a taper. The laterals also are off color. One is light to represent a porcelain crown, and the other is dark to indicate a devitalized tooth. The cuspid next to the light lateral is dark and appears darker by comparison. The other cuspid is a solid yellow which contrasts with the dark lateral.

Fig. 43 shows a case in which lapping was resorted to and the incisal edges were chipped with a rough stone. In Fig. 44 the teeth were turned somewhat out of line and considerable space was left between the centrals.

Figs. 45 and 46 show two lower dentures with irregularities that give a pleasing effect. Fig. 47 shows an irregularity that is frequently used

Fig. 45

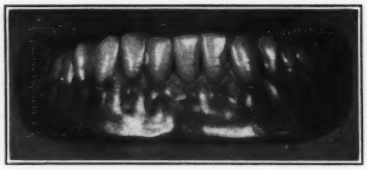


Fig. 46

Figs. 45 and 46—Pleasing effect produced by irregularities in lower dentures.

with success in the case of a small woman. The centrals are rather prominent, slightly longer than the laterals, and set at an angle that permits considerable space between them at the neck. They are a decidedly tapering type. Here, too, teeth of varying colors have been used.

Fig. 47—Irregularity used with success in small women.

Fig. 48

Fig. 49

Figs. 48 and 49—Upper and lower dentures with even alinement which is occasionally indicated.

Figs. 48 and 49 show an upper and lower denture with a dangerously even alinement, but occasionally this is indicated. Irregularities cannot always be used with good effect. If the features are regular and it is known that the patient had even teeth originally, it is usually wise to use an even set-up and depend on varying colors to produce the desired effect. In these cases, the lowers can often be crowded a bit, for few lower teeth are exactly even except in an edge-to-edge bite. In order to determine whether to use an irregularity on the upper or lower denture, it is usually wise to watch the patient carefully during the try-in to see which lip moves more in talking. Some people show their uppers while others will carry on a lengthy conversation with scarcely any movement of the upper lip. In the latter case the irregularity can be put on the lower denture.

After the correct vertical dimension has been established, the length of either denture can be changed without changing the established dimension by lowering one and lengthening the other according to the lip action. It should always be remembered that some tooth structure should show during a conversation. To fail in this usually means that the vertical dimension is too short. Unless the dentures are made immediately following extraction, it is always wise to show more than it seems the case will permit, particularly if lines are present at the alae of the nose. Under ordinary circumstances, I am careful to let the patient and his friends see exactly what he is going to get while the denture is still in wax, but I am frank to admit that I have been guilty of opening the articulator a millimeter or two after the patient has accepted the set-up. But this is done only when I am positive he can use more distance to advantage, and in cases in which I have not been able during the try-in to make the patient realize that the added distance will be to his advantage.

This is a dangerous practice and one that may get a dentist into trouble. In fact, the dentures may have to be made over to reduce them the amount that was added unless the dentist is sure of himself. Usually, he can explain before the patient sees the finished dentures in the mouth that the teeth are going to look large at first but that in a few days the face will become fitted to them so that the strange appearance will disappear. Any set of dentures that at least approximates the proper opening, placed in a face that has been shortened, is bound to look large at first; therefore, the patient need not be expected to be pleased with the first glance. It

Fig. 50—Even set-up with little overbite for patient without much mobility of facial tissue.

is always wise to get some members of the family to come with the patient for the try-in. Any "doubting Thomas" can be convinced at the same time that the explanation is being made to the patient. It is well to have an ally in a member of the family, and to have all complaints satisfied before the case is finished, because one word said against the work when the dentist is not there to explain may cause him to have to make the whole denture over, particularly if unusual lengths, abnormal irregularities, or contrasting colors are employed.

Fig. 50 shows another daring condition, a strikingly even set-up with little overbite. This is for the patient with little mobility of facial tissue. Such a patient clips his words incisively with little facial expression. The lips are thin but long; otherwise, the lower lip could be made to pout with such a small overbite.

In speech the lower teeth should come forward in line with the uppers. This is about the only rule I know of to govern the problem of overbite in normal cases. In abnormal cases one must be governed by the problem as presented. If the overbite is due to teeth loosened by pyorrhea, which have moved forward out of position (Fig. 28), the existing overbite should not be carried into the dentures, for the ridges are probably in their correct position, and the dentures can usually be constructed, after a reasonable resorption has taken place, with the teeth in the correct original position.

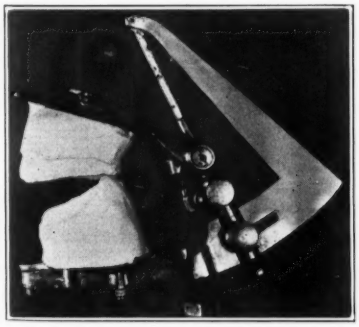


Fig. 51—Condition in which patient has always shown gums as well as teeth.

Fortunately, conditions as shown in Fig. 51 are not often encountered, but when they do they call for ingenuity. In the first place, it should be remembered that patients with such a condition have always shown their gums as well as their teeth. Surgical intervention may enable one to produce a denture that will show less than the teeth and gums did previously but the porcelain will show. The lower denture will stay in place better if the teeth are kept as near on the ridge as possible. With that fact in mind, the lowers should be placed in position first and the uppers allowed to fall where they will. Sometimes a first bicuspid can be omitted and a fairly good articulation still be secured (Figs. 52 and 53).

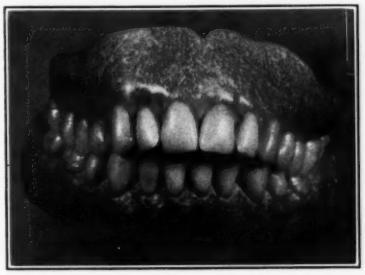


Fig. 52

Fig. 53

Figs. 52 and 53—Fairly good articulation secured although lower first bicuspid is omitted.

One should not attempt to secure a normal articulation (Figs. 54 and 55) by bringing the lower anteriors forward at the expense of setting them off the ridge, because this produces a distinctly unnatural expression, increases the leverage, and makes both dentures more susceptible to tripping. If the patient never had short, square teeth there is nothing to be gained in trying to hide the teeth by resorting to a shorter tooth.

When the overbite is not so pronounced (Figs. 56 and 57) usually a tooth can be selected that can be ground into position without too much trouble by setting up the case

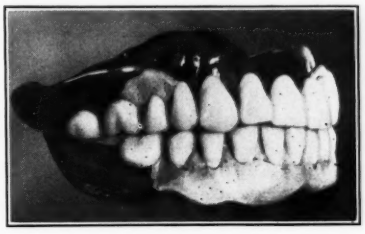


Fig. 54

Fig. 55

Figs. 54 and 55—Unnatural expression produced by short, square teeth which patient never had.

as in Figs. 32 and 33, and grinding the necks so that they have the appearance of growing naturally from the gums. It is better to use the full twenty-eight teeth if possible. This can often be accomplished by selecting a set of narrow lower anteriors. Sometimes the teeth can be ground against the gums and a finger of denture material (Fig. 58) can be run

Fig. 56

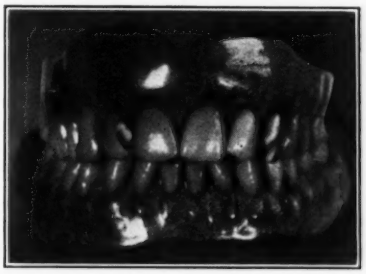


Fig. 57

Figs. 56 and 57—Narrow lower anteriors used when overbite is not so pronounced.

Fig. 58—Teeth ground against the gums and a finger of denture material run up over the bulge of the ridge.

up over the bulge of the ridge; however, this usually produces an unstable denture because of the admission of air from both the front and back, and also weakens it, making it more susceptible to fracture.

Summary

I have attempted to point out the muscles of mastication and expression that are affected by the incorrect relation of the mandible to the maxilla, and to show by means of photographs just what can be done to overcome their subsequent distortion. In the belief that the actual design of the denture itself has a great deal to do with the positioning of the overlying tissue, care has been taken to show that a harmonious result is obtained by reestablishing the original vertical dimensions, coupled with correct denture form so as not to place any impediment in the way of the distorted muscles as they attempt to regain their former positions. A careful selection of tooth form and color variation, together with the intelligent handling of abnormalities should produce the desired result, namely, the norm.

ELIMINATING POSTOPERATIVE PAIN WITHOUT THE USE OF POTENT DRUGS

MARTIN M. PRESS, D.D.S.
Bronx, New York

Postoperative pain is present in about 20 per cent of dental cases in varying degrees of severity and duration. The pain may be throbbing or dull and reflex, or it may be lancinating and severe. It usually commences when the novocain effects wear away, and lasts from one to ten hours; in some cases, from two to five days.

Causes

Postoperative pain may be due to one or all of the following causes:

1. Laceration of the tissues.
2. Trauma during the operation.
3. Injection of the novocain solution.
4. The vital resistance of the patient.

All these conditions contribute to postoperative pain; yet, sometimes after the extraction of a loose tooth where there is little or no laceration or trauma of tissues, where nitrous oxide-oxygen has been used as the anesthetic, and where the patient appears to be in normal good health, postoperative pain is nevertheless present.

5. I believe one likely causative factor which has not been given much attention is the condition of the socket or bone cavity following dental operations. In these cavities there are usually raw edges of bone, torn blood vessels, and severed terminal nerve filaments.

Technique

1. Any spicules of bone which may have broken off during extraction should be removed.

2. The bone socket should be painted with an 85 per cent solution of phenol. This solution serves a double purpose: it sterilizes the area to which it is applied, and deadens the severed terminal nerve filaments. Although the action of this drug is self-limiting, especially in bone sockets, it is well to keep a solution of alcohol at hand in case neutralization is necessary.

3. A strip of plain sterile gauze, about one inch in length, is saturated in a sterile solution of oil of cloves. The excess of the solution is removed on a sterile towel. The dressing is packed lightly into the socket or sockets and allowed to remain not longer than from twelve to twenty-four hours.

This dressing acts as a sedative in the socket and as a lubricant to the raw edges of bone and torn blood vessels. I have found that it does not retard healing since it is packed lightly and remains in the socket for only a short time. I have found also that the dressing has no ill effect on the tissues with which it comes in contact. *If the dressing is allowed to remain for a longer period than has been specified here it will dry and shrivel up, and thus act as an irritant to the tissues.*

4. If it is desired to maintain further drainage, the socket may be repacked with a strip of iodoform gauze.

Conclusion

In a series of 182 cases pain persisted in only two cases after the dressing of oil of cloves was removed. The sockets were repacked and allowed to remain for a similar period. In one case the pain still persisted. Roentgenographic examination showed that in removing two lower molar roots a pericementitis was set up in an adjoining tooth because too much leverage was put on that tooth. In the remaining cases postoperative pain was avoided and the area of operation was less sore.

DENTAL ASSISTANTS AND SECRETARIES

ELSIE GREY

Elsie Grey will be glad to hear from any readers, dental assistants, secretaries, dental hygienists and dentists. Questions are just as welcome as suggestions. It is hoped that this department will provide a free and helpful exchange of thought on new and better methods in dentistry. It is your department and we want you to take the fullest advantage of it. Write to Elsie Grey—she will help you.

QUESTION—I spilled silver nitrate on the front of a uniform. Can you tell me how to take out the stain?

—*M. L. S.*

ANSWER—Touch up the silver nitrate stains with iodine; then use ammonia to remove the iodine stains. Rinse well in clear water. This method should also remove similar stains from wash basins, cuspidors, and other articles of equipment that have become spotted with silver nitrate. It may take several applications of iodine and ammonia to bring about satisfactory results.

QUESTION—I note in the instructions for mixing developer that it says to use distilled water. Why? Where can I get it? Also, can I use freshly mixed developer at once, or is it better to wait a while? What causes light colored spots on films?

—*M. S. T.*

ANSWER—The use of distilled water in mixing developer solutions is recommended because it does not contain dirt or chemicals that are frequently found in tap water. You can purchase distilled water in any drug store or at an automobile gas station. Freshly made developer can be used but you will have better results if you allow it to stand for several hours.

The spots you complain of may be caused by handling the films while wet; by dust on the film or by specks of foreign material that were in the developing powder. To prevent this, strain the solution, after mixing, through a piece of cheese cloth. The spots may also be caused by air bubbles which you can eliminate by moving the films up and down when first immersed in the solution. Sometimes the emulsion coating has bubbles in it, and this, of course, you cannot help. Also, if you store your films in a damp place, it may cause your films to develop transparent spots.

QUESTION—What can I do to keep the stoppers in cavity lining bottles from sticking; also, those in shellac and sandarac bottles?

—*V. N.*

ANSWER—Wipe the inside of the neck of the bottle thoroughly clean, and clean the stopper with alcohol; then coat the inside of the bottle neck and the stopper with a thin film of vaseline.

I offer the following suggestion to aid some of the assistants who have had the same difficulty. My uniforms and the dentist's gowns were always slipping from the wooden hangers to the floor of the clothes closet. I cut some old rubber dam in strips and wound them around the ends of the hangers, and glued the ends fast. This holds the garments from slipping off.

—*E. G.*

Thanks, E. G. If you have no old rubber dam, large elastic bands wound around the ends of hangers will do the trick also.

REPAIR OF BRIDGES

D. H. Browning, D.D.S., of Lombard, Illinois, suggests the following technique for the repair of bridges in cases in which the occlusal surface of an abutment shell crown is worn through as a result of the stress of mastication:

1. The bridge should be removed and thoroughly cleaned with a strong soap solution or Gold Dust.
2. If two shells are present the teeth should be relieved under both shells at the points where they come in contact with the opposing teeth.
3. Warm inlay wax is placed in the ends of the crowns, and the patient is told to close into the normal bite.
4. The wax is chilled and removed, and the cusps are carved as desired.
5. The bridge is replaced on the teeth and removed several times. This sufficiently enlarges any excess of wax in the crown to compensate for any subsequent shrinkage. The wax is thoroughly chilled in the mouth and removed.
6. A sprue is mounted at each end of the bridge so that the sprues are in direct line with each other.
7. The sprue is placed in a crucible former, and each end is painted with a thick mix of investment.
8. After the initial set the crucible-forming base is placed in the investment ring, and the investing is finished. One should be sure that the sprue extends at the opposite end well above the investment so that a crucible can be carved.
9. After the investment has set sufficiently a crucible is carved into it. The result is an investment ring with sprue holes at opposite ends.
10. The wax elimination can be done in the manner best suited to the individual operator.
11. After the wax is eliminated the heat is raised until the ring is a cherry red. The high heat is essential because the new gold must be made to sweat onto the old crowns.
12. The case is now ready to be cast. I prefer to do this casting with a gold that has a high gold solder content. This insures perfect adaptability of the new gold to the crowns. The gold is heated to the fusing point, and one end is cast. The ring is removed from the casting machine and the other end placed to be cast in position. The blow pipe is played over the ring for a minute or so before proceeding to cast again.
13. If the bridge contains Steele facings these should be soaked off with acid before this technique is started. If there are no facings present the case can be removed from the investment immediately.

This technique assures (1) crowns that fit perfectly, with a minimum amount of work; (2) occlusal surfaces with correct articulation; (3) saving of time by simultaneous casting, and (4) no faulty adaptation of the gold to the tooth.

LETTERS

Just a word about THE DIGEST. I like it fine and think it is one dental magazine the patient, too, might get something from, so keep it on the reception room table.—J. A. ZWISLER, D.D.S., *Kankakee, Ill.*

Please allow me to take this opportunity also, to tell you how much I enjoy THE DENTAL DIGEST. I think that it is very much worth while.—E. BENTON CONAWAY, D.D.S., *Columbus, Ohio*

I am enjoying the new DENTAL DIGEST very much and like the idea of pictorial features very much.—ELBERT W. KING, D.D.S., *Geneseo, Ill.*

I just want to say that I never got much good out of my toothbrush until Charters came along in the new DENTAL DIGEST and showed me how to use it. For that article alone I owe you folks something. You have a gorgeous book.—ALEXANDER SNYDER, D.D.S., *New York City*

Best magazine in dental world.—R. O. KREBS, D.D.S., *Gresham, Wis.*

Incidentally let me take this opportunity of expressing my appreciation for the fine work you are doing on your new creation—for the DIGEST is a creation in every sense of the word, a great step forward in the progress of dentistry. Congratulations, and may your publication continue to grow. —DAVID W. BURG, D.D.S., *Los Angeles*

I have just finished reading the June issue of THE DENTAL DIGEST which I received this noon. The article written by Doctor Olga S. Hanson on "Common Sense about Heart Disease" is the best that I have read for a long time and is something every dentist should know something about.—HERMAN H. GODBERSON, D.D.S., *Northfield, Minn.*

About the first of this year, I wrote to the old DENTAL DIGEST to renew my subscription. In reply I was told that it had been sold to a firm in Pittsburgh. I felt sorry as I always had a liking for the old DIGEST; then I decided to send to you for your new DIGEST. You may imagine it was a great surprise to me when I finally received four copies altogether, including May—I have not yet received the March number—to see that it had blossomed out into full bloom, and is the most beautiful and attractive dental publication I have ever seen. In detail and illustration it far surpasses any other one published.

I congratulate the publisher and pray that the new DENTAL DIGEST may continue on in its good and great work.—W. R. MARTIN, D.D.S., *Cebu, P.I.*

I have received THE DENTAL DIGEST regularly. The medico-scientific articles which have appeared in it are extremely interesting and most constructive. Allow me to congratulate you.—ARTURO A. SENIOR, D.D.S., *Venezuela*

Though I am late, I would like to congratulate you for the excellent publication you are giving us. I have nothing but praise. Some of my patients were impressed with the illustrations, especially with the colored illustrations which, of course, naturally attract interest. Not only that, but they learned a great deal after the brief explanation I gave them between treatments. That is why I am looking forward to more illustrations with complete explanation and data. Let me repeat again that I am fully satisfied.—JESUS R. BORROMEO, D.D.S., *Philippine Islands*

I am a subscriber to THE DENTAL DIGEST, and want to express my appreciation for the wonderful material gathered together in such few pages and in such concise and practical form. It is indeed a pleasure to read and reread the contents and illustrations when all the issues are in loose-leaf form.—DAVID W. BURG, D.D.S., *Los Angeles*

After reading the last three issues of THE DENTAL DIGEST, I feel it a personal duty to congratulate you upon the production of such wonderful dental literature.

To class THE DENTAL DIGEST as a magazine is hazardous; DENTAL DIGEST literature, while it is delightfully interesting, lifelike, and educational, is much more appropriate.

May DENTAL DIGEST literature long maintain its high standard of carefully selected, educational subjects.—ELMER P. GREEN, D.D.S., *Ashtabula, Ohio*

I surely must commend in the highest terms the article on heart disease in the June issue, which I saw by accident on a hurried visit to a colleague's office. It is the most sensible, simple, concise, methodically arranged article for understanding by, and for education of, the laity, and the profession as well, on the etiology of heart pathology that I have ever seen. This is a good example of your wise selection of subject matter.—A. L. EDWARDS, D.D.S., *San Francisco*

Just a line in praise of the new DIGEST. Here in India, with no society meetings to attend, the excellent articles so ably illustrated are a great help.—W. F. RULE, D.D.S., *Rocklands, Secunderabad*

It is a pleasure each month to see the mailman arrive with the large DENTAL DIGEST envelope, knowing that contained therein is a very excellent brain tonic.—F. ARNOLD BIBLE, D.D.S., *Perth, Australia*

The magazine is greatly appreciated in this country, particularly so, in its new form.—JOHN E. HELY, *Liverpool, England*

For some months a friend has lent to me THE DENTAL DIGEST; he and I, as experienced dentists, agree that it is the best and most helpful magazine we have come across. To quote the words on page 1, it is a teacher, and a friend; it is thoroughly up-to-date, and that is what one needs in these days of keen competition.—TOBIAS DE OLIVEIRA VALENTE, D.D.S., *Est. S. Paulo, Brazil*

May I express my appreciation of your splendid article "My Ideal Dentist" which I have just read in THE DENTAL DIGEST for June, 1932. It is a fine tribute to the man in the dental profession who is endeavoring to render an honest health service. My only regret is that it appears in a dental magazine where few other than dentists will have the opportunity of reading it. How fine it would be if this very worth while article could appear in a magazine of general circulation, such as *The American Magazine*.—RALPH W. MARIS, D.D.S., *Portland, Ore.*

I further extend my warmest thanks for the efforts that you have had in the production of such a good magazine for the general practitioner. I believe it is the best, for it tells the reader in concise but complete form the correct procedure in any dental work, be it clinical or mechanical. I hope that you will continue to give us as good a magazine as you have in the past four months.—GONZALO T. ROMAN, D.D.S., *Manila, P.I.*

I sincerely hope that the beloved contemporary who had fires lit under him—under his disposition—because you numbered your pages at the bottom, had same extinguished before the hot weather really came. And, also, I feel you launched your magazine at a happy time, because we all have time to read it and time to write and tell you about it.

Personally, I think the book is wonderful in every way. I take pride in showing it to my patients, because they really feel dentistry is on the up and up and we have so few things to show them that look that way.—FRANK C. MCLAUGHLIN, D.D.S., *Philadelphia*

May I say at this time that I have thoroughly enjoyed each issue of DENTAL DIGEST that I have received. The illustrations are fine; they show clearly and concisely what the author intends to convey in his paper; they take you behind the scenes.

Your June issue was especially instructive and enjoyable. Doctor Seidner's article on inlay preparations was elaborately illustrated. The article on "Common Sense about Heart Disease" was instructive and well written.

We need more articles of this type by leading medical authorities in our dental magazines. Keep up the good work. Congratulations.—GEORGE H. EHRLICH, D.D.S., *Brooklyn*

May I take this opportunity to congratulate you on your very high class and interesting publication? The material and illustrations are most outstanding.—WM. H. GILPATRIC, D.M.D., *Boston*

THE DIGEST is really a postgraduate course to me; the articles are very lucid and concise and the diagrams and photographs are the last word in that line. I wish you all possible success in your venture.—J. BROWN DAVIE, D.D.S., *Inverness, Scotland*

Permit me to say that the new DENTAL DIGEST is the finest thing of the kind I have ever had, and you have surely set a new standard in dental magazines. I know that I am personally going to get a heap of education out of the different numbers. —ALEC T. RICHARDSON, D.D.S., *Dubbo, N.S.W., Australia*

I take this opportunity to congratulate you on your wonderful dental magazine THE DENTAL DIGEST of which I am a regular reader. I find the articles and illustrations simple and very clear, thus preventing confusion and facilitating the understanding. My wishes for THE DENTAL DIGEST are: "Give to the world the best that you have and the best of the world will come back to you."—VIGER PLAMONDON, D.D.S., *Quebec*

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THE PUBLISHER'S NOTE BOOK

IT is interesting to speculate on the origin of names. The name of a publication does, as a rule, give the prospective reader some indication as to the type of reading matter it contains, although many of our modern magazines are enigmas in this respect.

In looking back over the issues of the first volume of the *old* DENTAL DIGEST it is not difficult to determine why it was called a *digest*. In the thirty-seven-year-old September issue of this journal there were two original contributions; the remainder of the book was devoted to short digests of articles appearing in other dental journals throughout the world. Evidently this filled a definite need at that time as the majority of dentists subscribed to but a few dental journals; digests, therefore, enabled them to review the whole field of dental literature.

Today the average dentist receives a large number of dental journals and he insists that most of the articles be original communications to prevent duplication of reading effort. So your DENTAL DIGEST of 1932 is still another type of *digest*. Instead of presenting abstracts of articles appearing in other journals the *new* DENTAL DIGEST aims to present original articles in *digest* form; that is, shorn of all unnecessary and excessive explanation but presented in interesting and easily assimilable form, generously illustrated.

The formula on which the editor, Doctor Edward J. Ryan, has built the *new* DENTAL DIGEST is evidently meeting with the approval of readers, if letters of commendation and a constantly increasing subscription list are indications. It takes time and continuous effort, together with experience, to establish the style of a magazine, and the magazine you are receiving today does not represent the finished ideal of the magazine we hope to present. For that reason we repeat that constructive criticism is just as welcome as commendation.

MERWIN B. MASSOL, *Publisher*

NOTICE

We have received numerous inquiries regarding the book which was the subject of the editorial on page 313 of the September DENTAL DIGEST.

Evolution of Facial Musculature and Expression by Doctor Ernest Huber is published by the Johns Hopkins University Press at Baltimore, Maryland. The retail price is $2.50.

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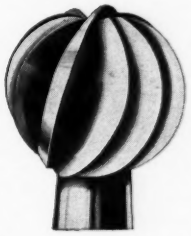

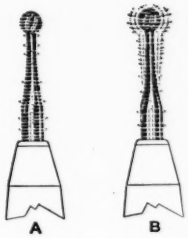

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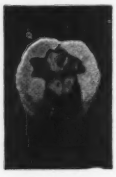

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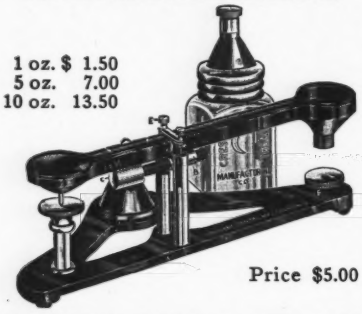

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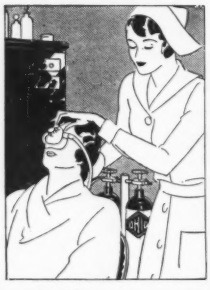

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NOTICE

The call for back copies of certain back issues of THE DENTAL DIGEST has been so great that we find our reserve supply of a number of the issues completely exhausted. Many readers have misplaced one or more numbers and there are others who subscribed in the middle of the present volume and wish to complete the year's file for binding purposes.

If any readers have copies of the January, March, April, May, and July issues that they wish to dispose of we will be glad to pay for them at the rate of twenty-five cents a copy. Please let us know how many copies you have before sending them. We will send the money at the time or extend your present subscription for that amount, whichever you choose.

Your assistance in helping us to obtain copies of the above-mentioned issues will be greatly appreciated by those who wish to complete their files.

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